

Hair Straightening Device

Field of the Invention

The present invention relates to a hair styling device, and more particularly to a hair straightening device.

Background

There are many conventional devices that are currently purported to straighten hair. For instance, conventional hair straightening devices, such as a flat iron, typically employ two heated elements between which hair is pressed. While this process succeeds in flattening the hair, it leaves the hair with an artificial appearance. Another problem with conventional hair straightening devices is that such an iron, comprised of two oppositely and adjacently-disposed heating elements, cannot safely or effectively reach the hair that is closest to the scalp. As a result, this process of straightening leaves the hair with an uneven quality.

The use of a flat iron on the hair may also damage the hair. The combination of tension on the hair and excessive heat pressing from two sides dries and weakens the hair, leading to breakage and split ends.

Other conventional devices used to straighten hair may employ hot air. Conventional devices such as the common blow dryer use hot air to mold the hair in a desired position hoping to obtain a more natural look. The problem with blow dryers is that the air blows many of the hairs in undesired directions. Unless each strand of hair is tightly secured with tension, which in turn is damaging to the hair, it is impossible to keep each strand lying in the desired position. While hot air successfully dries the hair it is not effective in straightening each strand.

Thus, conventional devices used to straighten hair are time consuming, complicated, and require the help of a stylist to achieve professional quality results.

However, even when a stylist assists in the hair straightening process, these conventional hair straightening devices do not provide the stylist with the ability to successfully straighten all lengths of hair. Straightening hair has always been a tedious process from which even professional stylists typically achieve less than satisfactory results.

SUMMARY

The present invention relates to a hair straightening device, such as a comb or, preferably, a brush or the like. In one embodiment, the hair straightening device includes a handle. The hair straightening device also includes a base portion having a proximal end adjacent to the handle, a distal end and a surface. In addition, the hair straightening device includes a plurality of bristles extending from the surface of the base portion, each of the plurality of bristles having a tip. Furthermore, the hair straightening device includes a heating element extending between the proximal end and the distal end of the base portion. The heating element has a heated surface that is positioned between the surface of the base portion and the tips of the bristles. The heating element may be configured to be heated between 150°F and 600°F.

The hair straightening device may also include a power source for providing power for heating the heating element, such as an electric cord configured to be plugged into an electrical outlet, or a battery housed within the device. The heating element may be flat, curved or any other shape. In addition, the heating element may be positioned between rows of bristles, or may be positioned at or along a lateral edge of the base portion of the device. Alternatively or additionally, the heating element may have one or more openings, wherein at least one bristle is configured to extend through the opening or openings. Furthermore, the heating element may define grooves configured to guide hair.

In one embodiment, the heating element is adjustable, e.g., in a vertical direction between the surface of the base portion and the tips of the bristles. In the embodiment in which the heating element has one or more openings through which a bristle or bristles extend, the heating element may be adjustable such that the bristle or bristles

are configured to extend through and move within the openings. In another embodiment, the hair straightening device includes a second heating element, which may also be positioned between rows of bristles.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view that illustrates one embodiment of a hair straightening device, according to one embodiment of the present invention;

Figure 2 is a front view of a hair straightening device, according to one embodiment of the present invention;

Figure 3 is a perspective view of a hair straightening device, according to another embodiment of the present invention;

Figure 4 is a front view of a hair straightening device, according to another embodiment of the present invention;

Figure 5 is a front view of a hair straightening device, according to another embodiment of the present invention;

Figure 6 is a front view that illustrates a hair straightening device having a heating element that is positioned along the lateral edge of the base portion, according to another embodiment of the present invention;

Figure 7(a) is a side cross-sectional view of a hair straightening device, according to still another embodiment of the present invention;

Figure 7(b) is a side view that illustrates a heating element, the heating element defining grooves having a square or rectangular profile, according to still another embodiment of the present invention; and

Figure 7(c) is a side view that illustrates a heating element, the heating element

defining grooves having a curved or undulating profile, according to still another embodiment of the present invention.

DETAILED DESCRIPTION

The present invention, according to one embodiment thereof, is directed to a hair straightening device. Figure 1 is a perspective view that illustrates one embodiment of a hair straightening device 10. The hair straightening device 10 includes a handle 12. The hair straightening device 10 also includes a base portion 14 having a proximal end 14a adjacent to the handle 12 and a distal end 14b. The base portion 14 also defines a surface 16, which may be flat or curved.

The hair straightening device 10 also includes a plurality of bristles 18. The bristles 18 extend from the surface 16 of the base portion 14. Each of the bristles 18 have a tip 18a. Advantageously, the bristles 18 are configured so as to be generally perpendicularly arranged relative to the surface 16 of the base portion. However, it should be recognized that the bristles 18 may be configured so as to be arranged at any desirable angle relative to the surface 16 of the base portion 14. In addition, it should be recognized that, while some embodiments may employ bristles 18 that are all arranged at a given angle relative to the surface 16 of the base portion 14, other embodiments may employ some bristles 18 which are arranged at a first angle relative to the surface 16 of the base portion 14 and some bristles 18 which are arranged at a second, e.g., different, angle relative to the surface 16 of the base portion 14.

The hair straightening device 10 also includes a heating element 20. The heating element 20 may extend between the proximal end 14a and the distal end 14b of the base portion 14. The heating element 20 preferably has a heated surface 20a that is positioned between the surface 16 of the base portion 14 and the tips 18a of the bristles 18.

The hair straightening device 10 may also include a power source 22 for providing power, e.g., electric power, for heating the heating element 20. In the embodiment shown, the hair straightening device 100 includes a power source 22 in the

form of an electric cord 22a configured to be plugged into an electrical outlet. Alternatively or additionally, the hair straightening device 10 includes a power source 22 in the form of a battery 27 housed within the hair straightening device 10.

The hair straightening device 10 may also include an on/off switch that enables a user to selectively turn the device 10 on and off, such as on/off switch 24. In addition, the hair straightening device 10 may include a temperature control switch that enables a user to selectively control the temperature to which the heating element 20 is heated, such as temperature control switch 26.

The heating element 20 may have any number of different shapes and configurations. For instance, in one embodiment, the hair straightening device 10 has a heating element 20 that is substantially oblong, e.g., elongated, when viewed from above and that is substantially flat when viewed in cross-section. Figure 2, on the other hand, is a front view of a hair straightening device 100, in which the heating element 20, when viewed in cross-section, has one lateral edge that is substantially squared, and a second lateral edge that is curved or rounded. It should be recognized that the front, rear and lateral edges of the heating element 20 may have any conceivable shape. Furthermore, it should be recognized that the heating element 20 may have any conceivable shape when viewed from above (or from any other direction).

Referring still to Figure 2, the hair straightening device 10 includes a heating element 20 that is positioned between rows, e.g., rows 28a and 28b, of bristles 18. In this manner, the heating element 20 is less likely to inadvertently touch the scalp, fingers, etc. of the user. This is of particular importance as, in one embodiment of the present invention, the heating element 20 may be configured to be heated between, for example, 150°F and 600°F. At these temperatures, a user may be burned if any part of the user, other than the user's hair, is caused to contact the heating element 20.

Figure 3 is a perspective view of a hair straightening device 200, according to another embodiment of the present invention. As shown in Figure 3, the hair straightening device 200 includes a heating element 220 that has one or more openings

222. At least one bristle 218 extends from base portion 214 through the openings 222. It should be noted that, while Figure 3 illustrates one bristle 218 extending through each one of the openings 222, any number of bristles may extend therethrough. In addition, it should be noted that, while Figure 3 illustrates the bristles 218 and the openings 222 being arranged in a straight line, any arrangement of bristles 218 and openings 222 may be employed. Still further, it should be recognized that, while Figure 3 illustrates, for the purposes of clarity, the hair straightening device 200 having a single row of bristles 218 and having no additional bristles adjacent to the heating element, in other embodiments, the hair straightening device 200 may have any number of additional bristles in any conceivable arrangement.

Figure 4 is a front view of a hair straightening device 400, according to another embodiment of the present invention. In this embodiment, the heating element 420 is adjustable. In this manner, hair of differing lengths, styles, thicknesses, etc. may be accommodated by the same device. Advantageously, the heating element 420 is adjustable in a vertical direction, e.g., a direction perpendicular to the surface 416 of the base portion 414. In other embodiments, the heating element may be adjustable in a different, e.g., non-vertical, direction. The heating element 420 may be adjustable by any conceivable adjustment mechanism, e.g., manually, automatically, etc. Furthermore, the heating element 420 may be adjustable between any two or more positions. For instance, the heating element 420 may be adjusted between a first position, shown as 420a, at which the heating element 420 is immediately adjacent to the surface 416 of the base portion 414, and a second position, shown in dotted lines as 420b, at which the heating element 420 is at, below or above a level defined by the tips of the bristles 418. In addition, the heating element 420 may be adjustable to any position, e.g., shown in dotted lines as intermediate position 420c, between these first and second positions.

While Figure 4 illustrates the heating element 420 being adjustable while positioned between rows of bristles 418, the present invention also contemplates that other arrangements of the heating element, for instance the heating element 220 shown in Figure 3, may be adjustable. Referring to Figure 3, the heating element 220 may be

vertically adjustable, e.g., adjustable in a direction generally perpendicular to a surface of the base portion 214. In this case, as the heating element 220 is raised and lowered relative to the surface 216 of the base portion 214, the bristles 218 are caused to move through and within the openings 222.

The hair straightening device of the present invention may have two or more heating elements. For instance, Figure 5 is a front view of a hair straightening device 500, according to another embodiment of the present invention. In this embodiment, the hair straightening device 500 includes a first heating element 520a and a second heating element 520b. Each of the heating elements 520a, 520b may have any number of different shapes and configurations. For instance, in one embodiment, the hair straightening device 500 may have heating elements 520a, 520b, each of which is, e.g., substantially oblong, elongated or rectangular when viewed from above, and that is, e.g., substantially flat, curved, rounded or squared when viewed in cross-section. The heating elements 520a, 520b may be positioned between rows, e.g., rows 528a, 528b and 528c, of bristles 518 extending from base portion 514 or in any other arrangement relative to the bristles 518.

While the embodiments described hereinabove have the heating element positioned generally above the surface of the base portion, in other embodiments, the heating element may be positioned at or along a lateral edge of the base portion. For instance, Figure 6 is a front view that illustrates a hair straightening device 600 having a heating element 618 that is positioned along a lateral edge 614e of a base portion 614. As shown in Figure 6, the hair straightening device 600 may also include a bristle attachment 630. The bristle attachment 630 may include one or more additional bristles 618, or sets or rows of additional bristles 618. Furthermore, the bristle attachment 630 may be configured to be attachable, e.g., in the direction shown by the arrows, such as by any conceivable attachment mechanism, to the heating element 618 positioned at the lateral edge 614e of the base portion 614.

Figure 7(a) is a side cross-sectional view of a hair straightening device 700 according to still another embodiment of the present invention. As shown in Figure

7(a), the heating element 720 is not flat, but instead has a curved or grooved shape when viewed in a side cross-sectional view. Figure 7(a) also illustrates that the tips 718a of the bristles 718 may have various different lengths, and may define a surface, shown in dotted lines as surface 718b, having any conceivable shape, e.g., curved.

Figure 7(b) is a side view that illustrates a heating element 720a, the heating element 720a defining grooves 7201 having a square or rectangular profile. Figure 7(c), on the other hand, is a side view that illustrates a heating element 720b, the heating element 720b defining grooves 7202 having a curved or undulating profile. Of course, in these embodiments, the grooves defined by the heating element 720 may have any conceivable shape or arrangement. The grooves formed by the heating element 720 may assist in guiding the hair of a user.

It should be recognized that the base portion as shown in some of the aforementioned embodiments, e.g., having a significant width and including multiple rows of bristles, thereby enable the device to be employed as a brush. Alternatively, in other embodiments, the hair straightening device may be configured so as to have a relatively narrow base portion and to include a single row of bristles, thereby enabling the device to be employed as a comb.

Furthermore, it should be recognized that the hair straightening device described hereinabove may be employed to straighten the hair of human, animals, or any other entity that includes hair.

The present invention provides the advantage that it enables any length of hair, including very short hair, to be straightened in a quick, safe, and simple process. As the hair is guided through the bristles of the brush, the hair comes into contact with the heating element. The heating element relaxes the hair and molds the hair into the configuration which the hair assumes as the hair is being brushed. Thus, the disadvantages of the blow dryer and the flat iron may be eliminated. Unlike a conventional blow dryer, the hair is not blown away from the brush that is positioning the hair in the desired shape. Furthermore, unlike the flat iron, the hair is not exposed

and flattened between two heated elements. According to the present invention, the hair straightening device of the present invention provides for an arrangement whereby excessive tension is not needed to straighten the hair. Instead, the hair's own weight and resiliency guides it through the bristles of the brush, and the stress to the hair is no greater than the simple act of running a brush through one's hair.

Thus, unlike with conventional hair straightening devices, the heat needed to relax the hair is not being used in conjunction with excessive force, pulling, or pressing. After contacting the heating element, the hair is caused to be straightened and smoothed for a long-lasting style. The process also leaves the hair with a shine.

Another advantage of the hair straightening device of the present invention is its ability to straighten hair of any length, particularly very short hair. For instance, the hair straightening device of the present invention can safely straighten hair from its roots without burning the scalp. The brush can grasp and straighten hair that is very close to the scalp and leaves the entire length of hair evenly styled.

Thus, the several aforementioned objects and advantages of the present invention are most effectively attained. Those skilled in the art will appreciate that numerous modifications of the exemplary embodiment described hereinabove may be made without departing from the spirit and scope of the invention. Although various exemplary embodiments of the present invention has been described and disclosed in detail herein, it should be understood that this invention is in no sense limited thereby.